Sea Ice Biota and Under-ice Plankton from Southeastern Hudson Bay in 1983

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Le titre exact paraît au haut du résumé de chaque rapport.

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ABSTRACT

Hsiao, Stephen I. C., Nadia Pinkewycz, A. A. Mohammed and E. H. Grainger. 1984. Sea ice biota and under-ice plankton from southeastern Hudson Bay in 1983. Can. Data Rep. Fish. Aquat. Sci. 494: iv + 49 p.

The sea ice flora overlying a freshwater plume in southeastern Hudson Bay included 112 species of microalgae belonging to 49 genera. The ice flora was typically more densely concentrated than the phytoplankton beneath the ice which consisted of 125 species, mostly pennate diatoms, of 58 genera. The sea ice fauna, of 10 major taxa, was also generally more dense although less diverse than the zooplankton occurring beneath the ice.

Key words: Sea ice flora, microalgae, phytoplankton, quantitative composition, vertical distribution, sea ice fauna, zooplankton, water temperature, salinity

RESUME

Hsiao, Stephen I. C., Nadia Pinkewycz, A. A. Mohammed and E. H. Grainger. 1984. Sea ice biota and under-ice plankton from southeastern Hudson Bay in 1983. Can. Data Rep. Fish. Aquat. Sci. 494: iv + 49 p.

La flore qui se trouvait dans la couche de glace recouvrant un panache d'eau douce dans le sud-est de la baie d'Hudson comprenait 112 espèces d'algues microscopiques appartenant à 49 genres. En règle générale, sa concentration était plus dense que celle du phytoplancton situé sous la glace qui comprenait 125 espèces (58 genres), surtout des Diatomées pennées. De même, la faune intraglacielle, répartie en 10 grands taxons, était généralement plus dense, bien que moins variée, que le zooplancton observé sous la couche de glace.

INTRODUCTION

A large freshwater plume develops beneath the winter sea ice cover off the mouth of the Great Whale River in southeastern Hudson Bay. In order to observe the effects of the plume on the plants and animals occupying the ice, a brief collecting project was carried out in April of 1983, supported by a field program conducted by Sciences et Levés Océaniques, Quebec. Samples were taken of the biota occupying the lower 3 centimetres of the ice and of the plankton living beneath the ice, both within and outside the plume.

Collections of flora living within the ice included 112 species of microalgae belonging to 49 genera. Beneath the ice, there were 125 species of phytoplankton representing 58 genera. Concentrations of plants were greater in the ice than in the water immediately below at 8 of the 10 stations sampled. Pennate diatoms, consisting of more than 74 species of 22 genera, were the largest group taken, in terms of numbers of species and of cells in both the ice and the water.

The ice fauna included 10 major taxa, the zooplankton in the under-ice plume 11 taxa (7 of which were found in the ice as well), and the zooplankton outside the plume 19 taxa (only 6 of which were present in the ice samples). Concentrations of all but one of the taxa in the ice were far greater than in the water below. The single exception was the copepod Oithona, most abundant outside the plume. Nematodes, followed by flagellates, rotifers and ciliates dominated numerically in the ice, rotifers, Oithona and mites in the plume, and the copepods Pseudocalanus and Oithona outside the plume.

MATERIALS AND METHODS

Ten stations (Fig. 1) were sampled on 27 and 28 April 1983. Sea ice samples from the bottom 3 cm of the ice (except for one which included only the bottom 1 cm) were collected with a SIPRE ice corer of 7.6 cm inner diameter. The ice was placed in clean plastic containers and later thawed in the laboratory at room temperature. Water samples were collected as well. A hand-operated pump was used to draw samples of 75 ± 5 L from the plume (the relatively fresh layer immediately below the ice) and from outside the plume (either below it or outside its geographical range). Sub-samples of 135 mL of unfiltered water were kept for plant content, and the bulk of the pumped water filtered through 73-µm mesh to retain the zooplankton. The ice microalgae and the phytoplankton were quantitatively analysed for species composition and abundance following the techniques of Hsiao (1979)*. Physical data on the water were obtained from Sciences et Levés Océaniques, Quebec, and were the basis for estimating temperature and salinity values in the ice.

*Hsiao, S. I. C. 1979. Phytoplankton and sea ice microalgal data from Frobisher Bay, 1971 to 1978. Fisheries and Environment Canada. Fish. Mar. Serv. Data Rep. 155: 82 p.

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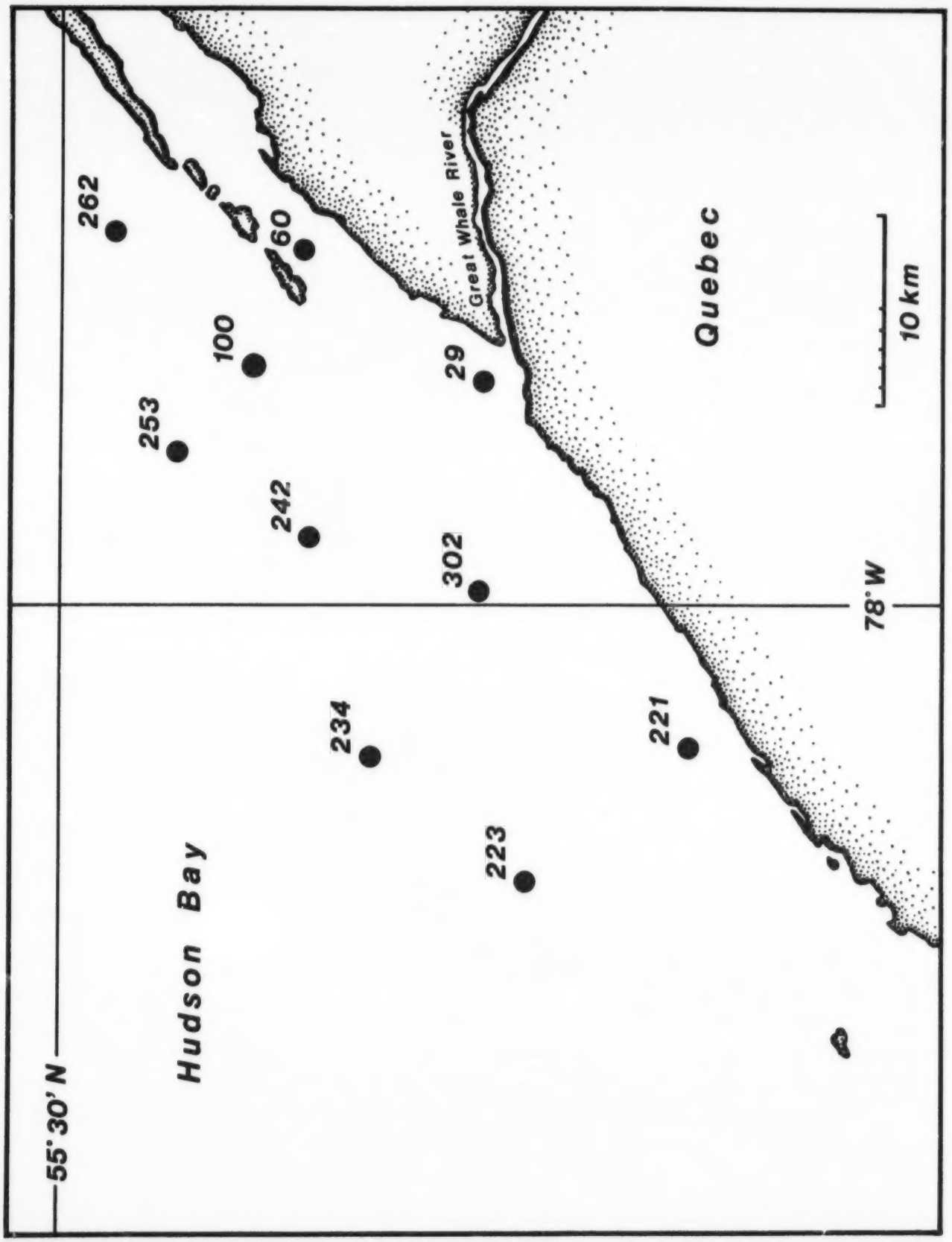

Fig. 1. The region of the Great Whale River plume, showing the locations of collection stations.

Table 1. Station locations.

Station	North Latitude	West Longitude
29	55°16.6'	77°48.8'
60	55°21.7'	77°42.4'
100	55°23.2'	77°48.2'
221	55°10.7'	78° 7.2'
223	55°15.5'	78°13.5'
234	55°19.8'	78° 7.3'
242	55°21.5'	77°56.7'
253	55°25.4'	77°52.3'
262	55°27.1'	77°41.4'
302	55°16.7'	77°59.2'

Table 2. Genera and species of sea ice microalgae and phytoplankton in the underlying water from southeastern Hudson Bay during April 1983.

Taxonomic group	Sea ice microalgae at the bottom of the sea ice	Phytoplankton in the water column beneath the sea ice
Bacillariophyta		
Centrales		
Chaetoceros borealis J. W. Bailey	X	
C. decipiens Cleve	X	
C. fragilis Meunier	X	X
C. furcellatus J. W. Bailey	X	
C. holsaticus Schuett	X	
C. septentrionalis Oestrup	X	X
C. teres Cleve	X	X
C. wighami Brightwell	X	
Coscinodiscus excentricus Ehrenberg		X
C. lacustris var. *septentrionalis* (Grunow) Rattray	X	
Cyclotella striata (Kuetzing) Grunow	X	X
C. striata var. *ambigua* (Grunow) Grunow		X
Eucampia groenlandica Cleve	X	X
Melosira arctica (Ehrenberg) Cleve	X	X
M. distans (Ehrenberg) Kuetzing	X	
M. islandica O. Muller	X	X
Skeletonema costatum (Greville) Cleve		X
Thalassiosira decipiens (Grunow) E. Joergensen		X
T. nordenskioeldii Cleve	X	X
T. oestrupii (Ostenfeld) Proschkina-Lavrenko		X
T. rotula Meunier		X
Pennales		
Achnanthes taeniata Grunow	X	X
Amphiprora alata (Ehrenberg) Kuetzing	X	X
A. concilians Cleve	X	X
A. kjellmanii Cleve	X	X
A. kjellmanii var. *kariana* (Grunow) Cleve	X	

Table 2. (Continued)

Amphora laevis var. laevissima (Gregory) Cleve	X	X
A. laevis var. minuta Cleve	X	
A. macilenta Gregory	X	
A. terroris Ehrenberg	X	X
Asterionella formosa Hassall	X	X
A. gracillima (Hantzsch) Heiberg	X	X
Bacillaria paradoxa Gmelin	X	X
Cocconeis costata Gregory		X
Cylindrotheca closterium (Ehrenberg) Reimann et Lewin	X	X
Cymbella ventricosa var. semicircularis (Lagerstedt) Oestrup		X
Diploneis litoralis (Donkin) Cleve	X	X
Eunotia arcus Ehrenberg	X	
E. divisa Héribaud		X
E. lunaris (Ehrenberg) Brébisson		X
E. monodon Ehrenberg		X
Fragilaria bicapitata Mayer	X	X
F. islandica Grunow	X	
F. pinnata Ehrenberg	X	X
F. striatula Lyngbye	X	X
Fragilariopsis nana (Steemann-Nielsen) Paasche	X	X
Gomphonema acuminatum var. coronatum (Ehrenberg) Wm. Smith		X
G. augur Ehrenberg	X	X
G. exiguum var. pachycladum (Brébisson) Cleve	X	X
G. gracile Ehrenberg	X	X
Grammatophora arctica Cleve		X
Hantzschia amphioxys (Ehrenberg) Grunow		X
H. vivax (Wm. Smith) M. Peragallo		X
Navicula algida Grunow	X	X

Table 2. (Continued)

N. apiculata Brébisson		X
N. cancellata Donkin	X	X
N. crassirostris Grunow	X	X
N. crucigeroides Hustedt	X	X
N. cryptocephala Kuetzing	X	X
N. directa (Wm. Smith) Ralfs	X	X
N. directa var. subtilis (Gregory) Cleve	X	X
N. forcipata Greville	X	
N. gastrum (Ehrenberg) Kuetzing	X	X
N. gelida Grunow	X	X
N. granii (E. Joergensen) Gran	X	X
N. kariana var. frigida (Grunow) Cleve		X
N. lanceolata (Agardh) Kuetzing	X	
N. latissima Gregory	X	
N. lineola Grunow	X	X
N. minima Grunow	X	X
N. peregrina (Ehrenberg) Kuetzing	X	
N. perlucens Oestrup	X	X
N. salinarum Grunow		X
N. transitans Cleve	X	
N. transitans var. derasa (Grunow) Cleve	X	X
N. trigonocephala var. depressa Oestrup	X	X
N. vanhoeffenii Gran	X	X
Nedium affine (Ehrenberg) Pfitzer	X	X
Nitzschia acicularis (Kuetzing) Wm. Smith	X	X
N. acuminata (Wm. Smith) Grunow		X
N. angularis var. kariana Grunow	X	X
N. cylindrus (Grunow) Hasle	X	X
N. delicatissima Cleve	X	X
N. distans Gregory	X	X
N. fluminensis Grunow	X	X
N. frigida Grunow	X	X

Table 2. (Continued)

N. frustulum (Kuetzing) Grunow	X	X
N. frustulum var. perpusilla (Rabenhorst) Grunow	X	X
N. grunowii Hasle	X	X
N. linearis (Agardh) Wm. Smith	X	X
N. lineata Hasle	X	X
N. marginulata Grunow	X	X
N. recta Hantzsch		X
N. seriata Cleve	X	X
N. sigma (Kuetzing) Wm. Smith	X	
N. tergestina (Kuetzing) Ralfs		X
Pinnularia borealis Ehrenberg		X
P. quadratarea (Schmic ' Cleve	X	X
P. quadratarea var. bicontracta (Oestrup) Heiden	X	
P. quadratarea var. bicuneata Heiden et Kolbe	X	X
P. quadratarea var. capitata Heiden		X
P. quadratarea var. densestriata Cleve	X	
P. quadratarea var. leptostauron Cleve	X	
P. quadratarea var. stuxbergii (Cleve) Cleve		X
Pleurosigma longum Cleve		X
P. marinum Donkin	X	
Pseudonitzschia delicatissima (Cleve) Heiden	X	
Stauroneis quadripedis (Cleve-Euler) Hendey	X	
S. septentrionalis Grunow	X	X
Surirella ovata Kuetzing		X
S. striatula Turpin	X	

Table 2. (Continued)

Synedra parasitica (Wm. Smith) Hustedt	X	X
S. pulchella (Ralfs) Kuetzing	X	X
Tabellaria fenestrata (Lyngbye) Kuetzing		X
T. flocculosa (Roth) Kuetzing	X	X
Thalassionema nitzschioides (Grunow) Van Heurck	X	X
Chlorophyta		
Ankistrodesmus falcatus (Corda) Ralfs	X	X
Carteria depressa Butcher	X	X
Chlamydomonas ballenyana Kol et Flint	X	
C. tetraolaris Wohlenweber	X	X
Closterium Nitzsch	X	X
Cosmarium Corda		X
Dunaliella parva Lerche	X	X
D. salina (Dunal) Teodoresco		X
Micrasterias Agardh	X	X
Pediastrum Meyen		X
Staurastrum Meyen	X	
Thalassomonas Butcher	X	X
Chrysophyta		
Coccolithus huxleyi (Lohmann) Kamptner		X
Dinobryon balticum (Schuett) Lemmermann		X
D. belgicae Meunier		X
D. cylindricum Imhof	X	X
Distephanus speculum (Ehrenberg) Haeckel		X
Phaeocystis pouchetii (Hariot) Lagerheim	X	X
Synura uvella Ehrenberg	X	
Cryptophyta		
Chroomonas placoidea Butcher		X

Table 2. (Continued)

Cyanophyta		
Spirulina Turpin		X
Euglenophyta		
Euglena proxima Dangeard	X	X
E. schmitzii Gojdics	X	X
E. viridis Ehrenberg	X	X
Pyrrophyta		
Coolia monotis Meunier	X	X
Dinophysis acuminata Claparède et Lachmann	X	X
D. arctica Mereschkowsky	X	X
Glenodinium lenticula (Bergh) Schiller		X
Goniaulax catenata Kofoid	X	X
G. grindleyi Reinecke		X
G. monilata Howell	X	X
G. scrippsae Kofoid	X	X
G. tamarensis Lebour		X
G. turbynei Murray et Whitting		X
Gymnodinium lohmanni Paulsen	X	X
G. rubrum Kofoid et Swezy		X
Gyrodinium spirale (Bergh) Kofoid et Swezy	X	X
Ornithocercus Stein	X	
Oxytoxum Stein	X	X
Peridinium minusculum Pavillard		X
P. punctulatum Paulsen	X	X
Polykrikos schwartzii Buetschlei		X
Prorocentrum maximum Schiller	X	X
P. micans Ehrenberg	X	X
P. rampii Sournia	X	X

Table 3. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 29, April 28, 1983.

Station depth (m)		27	
Sea ice thickness (cm)		117	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	6 m
Temperature (°C)	0	0.1	-1.4
Salinity (°/₀₀)	0	0.0	27.9
Total sea ice microalgae or phytoplankton (cells·L^{-1})	1,200	7,280	613
Bacillariophyta	160	6,240	458
Centrales	40	680	78
Chaetoceros furcellatus	40	--	--
Coscinodiscus sp.	--	80	22
Cyclotella striata var. *ambigua*	--	120	--
Melosira arctica	--	160	--
M. islandica	--	120	--
Skeletonema costatum	--	120	--
Thalassiosira nordenskioeldii	--	40	22
T. oestrupii	--	--	34
T. rotula	--	40	--
Pennales	120	5,560	380
Achnanthes taeniata	--	520	--
Amphora terroris	--	--	11
Cocconeis costata	--	40	--
Cylindrotheca closterium	--	40	--
Cymbella ventricosa var. *semicircularis*	--	40	--
Diploneis litoralis	--	80	--
Eunotia lunaris	--	40	--
E. monodon	--	80	--
Fragilaria bicapitata	--	360	--
F. pinnata	--	400	--
Fragilariopsis nana	--	80	--
Gomphonema sp.	--	--	11
G. augur	--	--	11
G. exiguum var. *pachycladum*	--	--	34
G. gracile	--	80	--
Grammatophora arctica	--	80	--
Hantzschia amphioxys	--	40	--
Navicula algida	--	--	11
N. cryptocephala	--	40	--
N. directa	--	--	11
N. minima	--	80	--
Nedium affine	--	160	--
Nitzschia acicularis	--	--	22
N. cylindrus	--	360	--
N. delicatissima	--	400	--

Table 3. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 6 m
N. distans	--	40	56
N. frigida	--	40	123
N. frustulum	--	40	--
N. frustulum var. *perpusilla*	--	40	--
N. grunowii	--	--	34
N. linearis	--	--	45
N. lineata	--	400	--
N. tergestina	--	--	11
N. recta	--	40	--
Pinnularia borealis	--	240	--
P. quadratarea	--	120	--
P. quadratarea var. *capitata*	--	40	--
Surirella ovata	--	40	--
Tabellaria fenestrata	--	440	--
T. flocculosa	--	1,160	--
Thalassionema nitzschioides	120	--	--
Chlorophyta	520	600	78
Ankistrodesmus falcatus	--	40	11
Chlamydomonas sp.	80	240	67
C. cysts	80	--	--
C. tetraolaris	80	--	--
Micrasterias sp.	280	200	--
Thalassomonas sp.	--	120	--
Chrysophyta	360	200	22
Coccolithus huxleyi	--	--	22
Dinobryon cylindricum	--	80	--
Phaeocystis pouchetii	360	40	--
Unidentified	--	80	--
Cryptophyta	--	40	--
Chroomonas placoidea	--	40	--
Euglenophyta	--	--	22
Euglena proxima	--	--	11
E. schmitzii	--	--	11
Pyrrophyta	160	200	33
Dinophysis acuminata	40	--	--
Glenodinium sp.	--	40	11
G. lenticula	--	40	--
Goniaulax sp.	--	40	--
G. turbynei	--	--	11
Gyrodinium spirale	--	--	11

Table 3. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 6 m
Prorocentrum sp.	80	--	--
P. micans	40	--	--
P. rampii	--	80	--

Table 4. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 60, April 27, 1983.

Station depth (m)		45	
Sea ice thickness (cm)		115	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	6 m
Temperature (°C)	0	-0.1	-1.4
Salinity (°/₀₀)	3	2.6	28.2
Total sea ice microalgae or phytoplankton (cells·L^{-1})	29,400	8,500	1,120
Bacillariophyta	22,760	8,000	800
Centrales	840	1,000	150
Chaetoceros decipiens	120	--	--
C. fragilis	160	--	--
C. septentrionalis	--	20	--
Coscinodiscus sp.	520	60	20
Eucampia groenlandica	40	--	--
Melosira arctica	--	260	--
Skeletonema costatum	--	--	30
Thalassiosira decipiens	--	100	--
T. nordenskioeldii	--	400	50
T. oestrupii	--	--	10
T. rotula	--	160	40
Pennales	21,920	7,000	650
Achnanthes taeniata	2,720	--	--
Amphiprora alata	760	20	40
A. kjellmanii	40	--	--
Amphora laevis var. *laevissima*	200	--	--
A. macilenta	80	--	--
Cylindrotheca closterium	80	440	10
Diploneis litoralis	120	160	--
Eunotia lunaris	--	20	10
Fragilaria bicapitata	480	--	20
F. islandica	640	--	--
F. striatula	--	100	--
Fragilariopsis nana	920	640	40
Gomphonema sp.	--	--	40
G. acuminatum var. *coronatum*	--	60	--
G. augur	--	--	10
G. gracile	--	40	--
Grammatophora arctica	--	20	--
Navicula algida	40	--	--
N. crucigeroides	--	20	--
N. cryptocephala	40	--	10
N. directa	--	40	10
N. directa var. *subtilis*	40	--	--
N. gastrum	--	20	10

Table 4. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 6 m
N. gelida	--	20	--
N. granii	280	120	--
N. kariana var. *frigida*	--	860	--
N. lineola	--	120	10
N. minima	40	140	30
N. perlucens	80	--	--
N. salinarum	--	40	--
N. transitans var. *derasa*	--	160	--
N. trigonocephala var. *depressa*	80	20	--
N. vanhoeffenii	760	1,180	--
Nedium affine	40	20	--
Nitzschia acicularis	--	80	--
N. acuminata	--	--	20
N. angularis var. *kariana*	40	--	--
N. cylindrus	--	240	30
N. delicatissima	40	260	--
N. distans	--	80	--
N. fluminensis	--	80	--
N. frigida	7,720	420	30
N. frustulum	40	420	100
N. frustulum var. *perpusilla*	160	180	10
N. grunowii	--	--	70
N. linearis	240	80	140
N. lineata	1,440	180	--
N. marginulata	--	20	--
Pinnularia borealis	--	400	--
P. quadratarea	80	180	--
P. quadratarea var. *densestriata*	280	--	--
P. quadratarea var. *leptostauron*	40	--	--
P. quadratarea var. *stuxbergii*	--	120	--
Pleurosigma longum	--	--	10
P. marinum	40	--	--
Stauroneis septentrionalis	3,840	--	--
Synedra pulchella	80	--	--
Thalassionema nitzschioides	440	--	--
Chlorophyta	3,960	140	90
Ankistrodesmus falcatus	40	--	--
Chlamydomonas sp.	40	40	70
C. cysts	760	--	--
C. tetraolaris	2,240	--	--
Closterium sp.	--	--	10
Cosmarium sp.	--	60	--
Dunaliella parva	360	--	--
Micrasterias sp.	320	--	--

Table 4. (Continued)

Sample type	Ice core	Water	
	bottom 3 cm	0 m	6 m
Pediastrum sp.	--	20	--
Staurastrum sp.	40	--	--
Thalassomonas sp.	160	--	--
Unidentified	--	20	10
Chrysophyta	280	160	130
Coccolithus sp.	200	--	110
Dinobryon belgicae	--	--	10
D. cylindricum	--	120	10
Phaeocystis pouchetii	--	20	--
Synura uvella	40	--	--
Unidentified	40	20	--
Cyanophyta	--	--	10
Spirulina sp.	--	--	10
Euglenophyta	960	--	--
Euglena proxima	120	--	--
E. schmitzii	840	--	--
Pyrrophyta	1,440	200	90
Dinophysis acuminata	160	--	--
D. arctica	80	--	10
Glenodinium sp.	120	--	20
Goniaulax catenata	320	--	--
G. grindleyi	--	--	10
G. tamarensis	--	140	10
Gymnodinium lohmanni	120	--	--
Gyrodinium spirale	40	--	--
Oxytoxum sp.	320	--	--
Peridinium sp.	80	20	--
P. punctulatum	40	--	--
Polykrikos schwartzii	--	--	30
Prorocentrum sp.	80	--	--
P. maximum	40	--	--
P. micans	40	--	--
P. rampii	--	40	10

Table 5. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 100, April 28, 1983.

Station depth (m)		74	
Sea ice thickness (cm)		111	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	5 m
Temperature (°C)	0	-0.1	-1.5
Salinity (°/₀₀)	2	2.3	26.9
Total sea ice microalgae or phytoplankton (cells·L^{-1})	22,200	97,647	470
Bacillariophyta	17,800	27,225	310
Centrales	1,700	726	30
Chaetoceros fragilis	200	726	--
Coscinodiscus sp.	200	--	--
Thalassiosira nordenskioeldii	1,300	--	--
T. oestrupii	--	--	30
Pennales	16,100	26,499	280
Achnanthes taeniata	--	--	50
Amphiprora kjellmanii	300	--	--
Amphora macilenta	200	--	--
Asterionella gracillima	100	--	--
Diploneis litoralis	600	--	--
Fragilaria pinnata	400	--	--
Fragilariopsis nana	100	363	--
Gomphonema exiguum var. *pachycladum*	100	--	--
G. gracile	--	--	20
Navicula cancellata	700	--	--
N. crassirostris	100	--	--
N. crucigeroides	100	--	--
N. cryptocephala	200	--	--
N. granii	500	--	--
N. lineola	--	--	10
N. minima	--	--	20
N. perlucens	200	--	--
N. transitans var. *derasa*	300	--	--
N. vanhoeffenii	1,000	--	10
Nitzschia cylindrus	400	--	10
N. delicatissima	900	--	--
N. frigida	800	--	60
N. frustulum var. *perpusilla*	200	363	10
N. grunowii	900	25,773	200
N. linearis	200	--	40
N. lineata	6,500	--	--
N. seriata	700	--	10
Pinnularia quadratarea	100	--	--
Tabellaria flocculosa	200	--	20

Table 5. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 5 m
Thalassionema nitzschioides	200	--	--
Unidentified	100	--	--
Chlorophyta	1,000	31,581	70
Carteria depressa	--	3,630	--
Chlamydomonas sp.	--	1,815	70
C. cysts	--	1,815	--
C. tetraolaris	300	6,171	--
Dunaliella parva	400	13,431	--
Thalassomonas sp.	--	4,719	--
Unidentified	300	--	--
Chrysophyta	200	7,260	10
Coccolithus huxleyi	--	6,897	--
Dinobryon cylindricum	200	--	--
Phaeocystis pouchetii	--	363	--
Unidentified	--	--	10
Euglenophyta	600	8,349	40
Euglena proxima	100	2,178	10
E. schmitzii	300	1,815	30
E. viridis	200	4,356	--
Pyrrophyta	2,600	23,232	40
Coolia monotis	200	3,993	--
Dinophysis acuminata	100	--	--
Glenodinium sp.	1,200	5,445	10
Goniaulax catenata	100	6,171	--
G. monilata	--	363	20
Gymnodinium lohmanni	--	2,904	--
G. rubrum	--	1,089	--
Gyrodinium sp.	100	--	--
G. spirale	--	1,089	--
Oxytoxum sp.	400	--	--
Peridinium sp.	200	726	--
Polykrikos schwartzii	--	726	10
Prorocentrum maximum	300	--	--
P. rampii	--	726	--

Table 6. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 221, April 28, 1983.

Station depth (m)		74	
Sea ice thickness (cm)		112	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	6 m
Temperature (°C)	0	-0.1	-1.5
Salinity (°/₀₀)	3	3	28.1
Total sea ice microalgae or phytoplankton (cells·L^{-1})	3,333,213	8,870	790
Bacillariophyta	3,093,831	6,590	730
Centrales	232,128	110	70
Chaetoceros fragilis	79,794	70	--
C. septentrionalis	47,151	10	--
C. teres	50,778	--	--
C. wighami	10,881	--	--
Coscinodiscus sp.	7,254	--	--
Melosira arctica	14,508	--	--
M. islandica	14,508	--	--
Thalassiosira nordenskioeldii	--	10	60
T. oestrupii	--	20	10
Unidentified	7,254	--	--
Pennales	2,861,703	6,490	660
Achnanthes taeniata	192,231	1,490	80
Amphiprora kjellmanii	21,762	--	--
Amphora laevis var. *laevissima*	14,508	--	20
A. macilenta	7,254	--	--
A. terroris	--	--	10
Asterionella formosa	7,254	--	--
Cylindrotheca closterium	--	10	--
Diploneis litoralis	14,508	--	--
Eunotia divisa	--	--	10
Fragilaria bicapitata	25,389	--	20
Fragilariopsis nana	184,977	1,440	--
Gomphonema sp.	--	--	30
G. augur	--	--	20
G. gracile	14,508	--	20
Navicula cancellata	3,627	--	20
N. crassirostris	--	--	10
N. cryptocephala	21,762	20	30
N. directa	3,627	--	--
N. gastrum	7,254	--	--
N. granii	134,199	130	--
N. lineola	--	--	10
N. peregrina	3,627	--	--
N. perlucens	14,508	--	--
N. transitans var. *derasa*	3,627	10	--

Table 6. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 6 m
N. vanhoeffenii	315,549	--	20
Nitzschia acicularis	43,524	10	20
N. cylindrus	36,270	160	10
N. delicatissima	61,659	10	--
N. frigida	123,318	230	10
N. frustulum	61,659	--	50
N. frustulum var. *perpusilla*	21,762	60	20
N. grunowii	805,194	2,890	150
N. linearis	3,627	10	80
N. lineata	145,080	--	--
N. marginulata	7,254	--	--
N. seriata	21,762	--	--
N. tergestina	--	--	10
Pinnularia quadratarea	18,135	--	--
P. quadratarea var. *bicontracta*	3,627	--	10
Stauroneis septentrionalis	141,453	--	--
Tabellaria flocculosa	--	20	--
Thalassionema nitzschioides	377,208	--	--
Chlorophyta	181,350	480	30
Carteria depressa	--	10	--
Chlamydomonas sp.	--	190	20
C. cysts	18,135	--	--
C. tetraolaris	36,270	170	10
Dunaliella parva	123,318	110	--
Micrasterias sp.	3,627	--	--
Chrysophyta	10,881	70	--
Coccolithus sp.	--	40	--
Dinobryon cylindricum	3,627	--	--
Unidentified	7,254	30	--
Euglenophyta	32,643	40	--
Euglena proxima	3,627	10	--
E. schmitzii	25,389	20	--
E. viridis	3,627	10	--
Pyrrophyta	14,508	1,680	30
Coolia monotis	--	20	--
Dinophysis arctica	--	10	--
Glenodinium sp.	--	130	20
Goniaulax sp.	--	50	--
G. catenata	14,508	1,370	--
Gymnodinium lohmanni	--	20	--
Gyrodinium spirale	--	20	--

Table 6. (Continued)

Sample type	Ice core	Water	
	bottom 3 cm	0 m	6 m
Oxytoxum sp.	--	20	--
Polykrikos schwartzii	--	30	--
Prorocentrum micans	--	--	10
P. rampii	--	10	--

Table 7. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 223, April 28, 1983.

Station depth (m)		86	
Sea ice thickness (cm)		118	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	4 m
Temperature (°C)	-1	-1.0	-1.5
Salinity (°/₀₀)	27	27.4	27.6
Total sea ice microalgae or phytoplankton (cells·L^{-1})	27,493,906	1,300	1,130
Bacillariophyta	26,977,346	1,200	850
Centrales	787,754	150	140
Chaetoceros borealis	116,226	--	--
C. fragilis	--	--	20
C. septentrionalis	503,646	--	--
Coscinodiscus sp.	12,914	--	--
C. lacustris var. *septentrionalis*	12,914	--	--
Cyclotella striata	--	30	--
Eucampia groenlandica	142,054	--	10
Skeletonema costatum	--	110	50
Thalassiosira nordenskioeldii	--	--	60
T. oestrupii	--	10	--
Pennales	26,189,592	1,050	710
Amphiprora alata	25,828	--	10
A. concilians	12,914	--	--
A. kjellmanii	142,054	--	--
Amphora laevis var. *laevissima*	51,656	10	--
A. laevis var. *minuta*	103,312	--	--
A. macilenta	12,914	--	--
A. terroris	25,828	--	--
Asterionella formosa	--	10	20
Bacillaria paradoxa	116,226	--	--
Cylindrotheca closterium	77,484	10	--
Diploneis litoralis	64,570	--	--
Eunotia arcus	25,828	--	--
Fragilaria pinnata	--	30	--
Fragilariopsis nana	297,022	--	--
Gomphonema sp.	103,312	10	40
G. augur	64,570	--	30
G. exiguum var. *pachycladum*	219,538	10	--
G. gracile	555,302	20	--
Navicula crucigeroides	12,914	--	--
N. cryptocephala	--	10	--
N. directa	64,570	--	--
N. directa var. *subtilis*	12,914	--	20
N. gastrum	25,828	--	--
N. granii	25,828	--	--

Table 7. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 4 m
N. lanceolata	12,914	--	--
N. latissima	25,828	--	--
N. minima	--	--	30
N. perlucens	--	30	10
N. transitans	38,742	--	--
N. transitans var. *derasa*	51,656	--	--
N. vanhoeffenii	5,888,784	40	40
Nedium affine	51,656	--	--
Nitzschia acicularis	51,656	--	10
N. angularis var. *kariana*	--	--	30
N. cylindrus	--	20	20
N. delicatissima	--	--	30
N. fluminensis	38,742	--	--
N. frigida	9,827,554	160	40
N. frustulum	503,646	20	20
N. frustulum var. *perpusilla*	787,754	20	40
N. grunowii	4,132,480	380	110
N. linearis	1,291,400	170	140
N. lineata	193,710	--	--
N. marginulata	25,828	--	--
N. seriata	309,936	90	20
N. sigma	51,656	--	--
N. tergestina	--	--	30
Pinnularia quadratarea	103,312	10	20
Pseudonitzschia delicatissima	258,280	--	--
Thalassionema nitzschioides	503,646	--	--
Chlorophyta	219,538	50	170
Chlamydomonas ballenyana	90,398	--	--
C. cysts	--	40	110
C. sp.	--	--	60
Dunaliella parva	103,312	10	--
Thalassomonas sp.	25,828	--	--
Chrysophyta	--	--	20
Dinobryon balticum	--	--	10
D. cylindricum	--	--	10
Euglenophyta	25,828	--	--
Euglena proxima	12,914	--	--
E. schmitzii	12,914	--	--
Pyrrophyta	271,194	50	90
Dinophysis acuminata	--	--	20
D. arctica	--	--	10

Table 7. (Continued)

Sample type	Ice core	Water	
	bottom 3 cm	0 m	4 m
Glenodinium sp.	25,828	30	20
Goniaulax monilata	38,742	10	--
G. scrippsae	--	10	--
Gymnodinium sp.	25,828	--	--
G. lohmanni	--	--	10
Gyrodinium spirale	12,914	--	--
Oxytoxum sp.	12,914	--	10
Peridinium sp.	--	--	10
Prorocentrum sp.	12,914	--	--
P. maximum	64,570	--	--
P. micans	--	--	10
P. rampii	77,484	--	--

Table 8. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 234, April 28, 1983.

Station depth (m)		125	
Sea ice thickness (cm)		84	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	4 m
Temperature (°C)	-1	-1.0	-1.5
Salinity (°/₀₀)	27	27.2	27.3
Total sea ice microalgae or phytoplankton ($cells \cdot L^{-1}$)	7,393,265	1,420	1,060
Bacillariophyta	7,270,582	1,330	960
Centrales	6,457	50	10
Cyclotella striata	6,457	--	10
Eucampia groenlandica	--	10	--
Thalassiosira nordenskioeldii	--	40	--
Pennales	7,264,125	1,280	950
Achnanthes taeniata	225,995	--	10
Amphiprora alata	--	--	10
A. kjellmanii	12,914	20	20
A. kjellmanii var. *kariana*	6,457	--	--
Amphora laevis var. *laevissima*	12,914	10	--
Asterionella formosa	--	--	10
Bacillaria paradoxa	38,742	10	--
Cylindrotheca closterium	523,017	10	10
Diploneis litoralis	6,457	--	--
Eunotia divisa	--	20	20
Fragilaria bicapitata	19,371	--	--
Fragilariopsis nana	--	210	--
Gomphonema sp.	--	10	40
G. augur	6,457	--	10
G. exiguum var. *pachycladum*	--	10	--
Navicula cancellata	6,457	--	10
N. crassirostris	--	--	10
N. crucigeroides	--	--	10
N. cryptocephala	64,570	40	--
N. directa	6,457	20	--
N. gastrum	12,914	--	--
N. granii	19,371	80	--
N. lineola	32,285	--	--
N. perlucens	--	20	--
N. transitans	32,285	--	--
N. transitans var. *derasa*	6,457	--	--
N. vanhoeffenii	6,457	20	--
Nitzschia acicularis	45,199	20	--
N. angularis var. *kariana*	--	20	--
N. cylindrus	368,049	--	--
N. delicatissima	129,140	--	--

Table 8. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 4 m
N. frigida	1,117,061	350	370
N. frustulum	12,914	70	40
N. frustulum var. *perpusilla*	6,457	50	70
N. grunowii	3,803,173	--	190
N. linearis	284,108	250	120
N. marginulata	6,457	--	--
N. seriata	19,371	--	--
N. tergestina	--	40	--
Pinnularia quadratarea	6,457	--	--
Stauroneis quadripedis	245,366	--	--
Surirella striatula	116,226	--	--
Synedra parasitica	64,570	--	--
Chlorophyta	45,199	10	60
Chlamydomonas sp.	12,914	10	50
C. cysts	--	--	10
C. ballenyana	--	--	--
C. tetraolaris	6,457	--	--
Dunaliella parva	25,828	--	--
Chrysophyta	--	--	10
Distephanus speculum	--	--	10
Euglenophyta	12,914	--	--
Euglena schmitzii	12,914	--	--
Pyrrophyta	64,570	80	30
Dinophysis acuminata	--	10	--
Glenodinium sp.	32,285	30	10
Goniaulax sp.	--	20	--
G. scrippsae	6,457	--	--
Gymnodinium lohmanni	--	10	--
Gyrodinium spirale	6,457	--	10
Peridinium punctulatum	6,457	--	10
Prorocentrum sp.	6,457	--	--
P. micans	--	10	--
P. rampii	6,457	--	--

Table 9. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 242, April 28, 1983.

Station depth (m)		67	
Sea ice thickness (cm)		130	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	5 m
Temperature (°C)	2	-0.1	-1.5
Salinity (°/₀₀)	2	1.9	26.6
Total sea ice microalgae or phytoplankton ($cells \cdot L^{-1}$)	19,600	1,510	600
Bacillariophyta	10,080	290	440
Centrales	160	30	30
Chaetoceros septentrionalis	--	--	10
Thalassiosira nordenskioeldii	40	--	20
T. oestrupii	--	30	--
T. sp.	120	--	--
Pennales	9,920	260	410
Asterionella formosa	--	--	20
A. gracillima	6,360	30	--
Cylindrotheca closterium	40	--	--
Diploneis litoralis	40	--	10
Eunotia arcus	440	--	--
E. divisa	--	10	--
Fragilaria bicapitata	120	--	10
F. striatula	1,240	--	--
Navicula apiculata	--	10	--
N. granii	80	--	--
N. lineola	--	--	20
N. perlucens	--	--	10
N. vanhoeffenii	120	--	50
Nedium affine	--	10	--
Nitzschia acicularis	--	--	10
N. cylindrus	360	50	30
N. frigida	--	--	110
N. frustulum	--	--	80
N. frustulum var. *perpusilla*	--	20	10
N. grunowii	160	110	10
N. linearis	--	--	30
Pinnularia quadratarea	--	--	10
Stauroneis septentrionalis	960	--	--
Thalassionema nitzschioides	--	20	--
Chlorophyta	8,520	490	40
Carteria depressa	320	--	--
Chlamydomonas ballenyana	240	--	--
C. sp.	--	120	10
C. cysts	1,400	--	--

Table 9. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 5 m
C. tetraolaris	5,480	270	30
Closterium sp.	40	--	--
Dunaliella parva	1,040	90	--
Thalassomonas sp.	--	10	--
Chrysophyta	80	90	30
Coccolithus huxleyi	--	--	10
Dinobryon cylindricum	--	10	20
Phaeocystis pouchetii	40	--	--
Unidentified	40	80	--
Euglenophyta	320	--	10
Euglena proxima	240	--	--
E. schmitzii	80	--	10
Pyrrophyta	600	640	80
Coolia monotis	40	--	--
Dinophysis acuminata	40	--	30
Glenodinium sp.	200	170	30
Goniaulax sp.	--	10	--
G. catenata	--	340	--
G. monilata	80	20	--
G. tamarensis	--	20	--
Gyrodinium spirale	40	--	--
Ornithocercus sp.	40	--	--
Oxytoxum sp.	--	30	--
Peridinium sp.	--	40	--
P. punctulatum	--	--	10
Prorocentrum sp.	160	--	--
P. micans	--	--	10
P. rampii	--	10	--

Table 10. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 253, April 28, 1983.

Station depth (m)		100	
Sea ice thickness (cm)		120	
Sample type	Ice core bottom 3 cm		Water 0 m
Temperature (°C)	-1		-1.5
Salinity (°/₀₀)	27		26.9
Total sea ice microalgae or phytoplankton (cells·L^{-1})	72,661,648		1,583
Bacillariophyta	72,080,527		1,535
Centrales	602,644		36
Chaetoceros decipiens	64,569		--
C. holsaticus	43,046		--
C. septentrionalis	344,368		12
Cyclotella striata	129,138		--
Melosira arctica	21,523		--
Thalassiosira nordenskioeldii	--		12
T. oestrupii	--		12
Pennales	71,477,883		1,499
Achnanthes taeniata	2,475,145		--
Amphiprora alata	86,092		--
A. concilians	64,569		12
A. kjellmanii	301,322		35
A. kjellmanii var. *kariana*	516,552		--
Amphora laevis var. *laevissima*	--		47
A. laevis var. *minuta*	86,092		--
Cylindrotheca closterium	258,276		--
Diploneis litoralis	86,092		--
Fragilaria islandica	172,184		--
Gomphonema sp.	193,707		59
G. augur	688,736		24
G. exiguum var. *pachycladum*	581,121		24
G. gracile	21,523		--
Hantzschia vivax	--		12
Navicula algida	21,523		12
N. crassirostris	--		12
N. crucigeroides	21,523		--
N. cryptocephala	--		12
N. directa	86,092		35
N. forcipata	21,523		--
N. gelida	21,523		--
N. kariana var. *frigida*	--		35
N. minima	--		12
N. peregrina	64,569		--
N. transitans	21,523		--
N. transitans var. *derasa*	43,046		--

Table 10. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m
N. trigonocephala var. *depressa*	21,523	--
N. vanhoeffenii	796,351	12
Nitzschia acicularis	21,523	35
N. angularis var. *kariana*	301,322	--
N. cylindrus	473,506	--
N. delicatissima	258,276	12
N. distans	21,523	--
N. frigida	38,160,279	295
N. frustulum	--	59
N. frustulum var. *perpusilla*	129,138	153
N. grunowii	19,585,930	35
N. linearis	4,842,675	118
N. lineata	--	401
N. seriata	387,414	--
N. sigma	43,046	--
Pinnularia borealis	--	12
P. quadratarea	86,092	12
P. quadratarea var. *bicontracta*	21,523	--
P. quadratarea var. *bicuneata*	258,276	--
Pleurosigma marinum	43,046	--
Synedra parasitica	193,707	--
S. pulchella	--	12
Thalassionema nitzschioides	--	12
Chlorophyta	451,983	24
Chlamydomonas sp.	--	12
C. ballenyana	86,092	--
C. cysts	21,523	--
C. tetraolaris	21,523	12
Dunaliella parva	322,845	--
Chrysophyta	43,046	--
Phaeocystis pouchetii	21,523	--
Unidentified	21,523	--
Euglenophyta	21,523	--
Euglena schmitzii	21,523	--
Pyrrophyta	64,569	24
Coolia monotis	21,523	--
Goniaulax catenata	--	12
Gyrodinium spirale	--	12
Peridinium sp.	21,523	--
Prorocentrum micans	21,523	--

Table 11. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 262, April 28, 1983.

Station depth (m)		70	
Sea ice thickness (cm)		112	
Sample type	Ice core	Water	
	bottom 3 cm	0 m	3 m
Temperature (°C)	-1	-1.0	-1.4
Salinity (°/₀₀)	18	18.0	25.9
Total sea ice microalgae or phytoplankton ($cells \cdot L^{-1}$)	26,719,066	18,720	2,340
Bacillariophyta	26,383,302	8,220	750
Centrales	2,750,682	150	60
Chaetoceros decipiens	38,742	--	--
C. septentrionalis	787,754	40	--
C. teres	--	10	--
Coscinodiscus excentricus	--	10	--
Cyclotella striata	12,914	--	--
Eucampia groenlandica	--	10	--
Melosira arctica	--	50	40
M. distans	1,911,272	--	--
Thalassiosira decipiens	--	30	20
Pennales	23,632,620	8,070	690
Achnanthes taeniata	322,850	--	40
Amphiprora alata	103,312	--	10
A. concilians	--	10	--
A. kjellmanii	154,968	70	--
A. kjellmanii var. *kariana*	1,071,862	--	--
Amphora laevis var. *laevissima*	--	20	--
A. laevis var. *minuta*	25,828	--	--
Asterionella formosa	--	--	30
Bacillaria paradoxa	--	10	--
Cylindrotheca closterium	38,742	10	10
Diploneis litoralis	38,742	10	10
Fragilaria islandica	1,149,346	--	--
Fragilariopsis nana	697,356	870	--
Gomphonema sp.	38,742	110	--
G. augur	245,366	10	10
G. exiguum var. *pachycladum*	142,054	10	10
G. gracile	232,452	10	--
Navicula crucigeroides	--	10	--
N. cryptocephala	90,398	10	10
N. directa	90,398	30	--
N. gastrum	--	20	--
N. peregrina	25,828	--	--
N. perlucens	12,914	--	--
N. transitans var. *derasa*	12,914	30	--
N. vanhoeffenii	5,578,848	150	170

Table 11. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 3 m
Nitzschia sp.	426,162	--	--
N. acicularis	12,914	180	20
N. angularis var. *kariana*	38,742	--	--
N. cylindrus	116,226	--	10
N. delicatissima	348,678	--	--
N. frigida	3,861,286	1,440	130
N. frustulum	348,678	250	20
N. frustulum var. *perpusilla*	594,044	250	60
N. grunowii	2,879,822	3,900	50
N. linearis	4,171,222	340	30
N. lineata	464,904	--	--
N. marginulata	--	20	--
Pinnularia quadratarea	180,796	--	--
P. quadratarea var. *bicontracta*	64,570	--	--
P. quadratarea var. *capitata*	--	--	10
Stauroneis septentrionalis	--	300	--
Synedra parasitica	51,656	--	--
Chlorophyta	154,968	220	--
Chlamydomonas sp.	--	220	30
C. ballenyana	38,742	--	--
C. cysts	--	--	10
C. tetraolaris	38,742	--	--
Dunaliella parva	77,484	--	10
D. salina	--	--	10
Chrysophyta	12,914	340	50
Phaeocystis pouchetii	12,914	190	30
Unidentified	--	150	20
Euglenophyta	12,914	10	--
Euglena proxima	--	10	--
E. schmitzii	12,914	--	--
Pyrrophyta	154,968	9,930	1,540
Dinophysis arctica	38,742	20	10
Glenodinium sp.	64,570	20	10
Goniaulax catenata	12,914	9,510	1,450
G. scrippsae	25,828	40	10
Gymnodinium lohmanni	--	80	--
Gyrodinium spirale	--	10	--
Oxytoxum sp.	--	40	--
Peridinium minusculum	--	150	30
P. punctulatum	--	60	10
Polykrikos schwartzii	--	--	10

Table 11. (Continued)

Sample type	Ice core	Water	
	bottom 3 cm	0 m	3 m
Prorocentrum maximum	--	--	10
P. rampii	12,914	--	--

Table 12. Quantitative composition and vertical distribution of sea ice microalgae and phytoplankton in the underlying water with related environmental parameters in Hudson Bay at station 302, April 28, 1983.

Station depth (m)		93	
Sea ice thickness (cm)		114	
Sample type	Ice core	Water	
	bottom 1 cm	0 m	6 m
Temperature (°C)	0	0.0	-1.5
Salinity (°/₀₀)	1	1.0	27.4
Total sea ice microalgae or phytoplankton (cells·L^{-1})	85,600	3,704	200
Bacillariophyta	23,800	242	170
Centrales	600	10	20
Chaetoceros decipiens	200	--	--
Coscinodiscus sp.	400	--	--
Thalassiosira decipiens	--	--	20
T. oestrupii	--	10	--
Pennales	23,200	232	150
Achnanthes taeniata	400	--	50
Asterionella formosa	1,400	212	--
A. gracillima	3,600	--	--
Cylindrotheca closterium	400	--	--
Diploneis litoralis	200	--	--
Fragilaria bicapitata	400	20	--
F. islandica	3,800	--	--
Gomphonema sp.	200	--	--
G. exiguum var. *pachycladum*	--	--	10
G. gracile	800	--	--
Navicula directa	400	--	--
N. granii	600	--	--
N. perlucens	200	--	--
N. transitans	200	--	--
N. vanhoeffenii	4,200	--	--
Nitzschia acicularis	800	--	--
N. angularis var. *kariana*	800	--	--
N. cylindrus	1,400	--	10
N. delicatissima	1,000	--	--
N. frigida	--	--	20
N. frustulum	1,200	--	10
N. frustulum var. *perpusilla*	--	--	10
Pinnularia sp.	400	--	--
P. quadratarea	200	--	--
Synedra parasitica	600	--	20
Tabellaria flocculosa	--	--	20
Chlorophyta	42,600	2,141	10
Carteria depressa	2,000	283	--
Chlamydomonas sp.	--	434	10

Table 12. (Continued)

Sample type	Ice core bottom 3 cm	Water 0 m	Water 6 m
C. ballenyana	200	--	--
C. cysts	8,200	--	--
C. tetraolaris	25,600	838	--
Dunaliella parva	5,600	495	--
Micrasterias sp.	400	--	--
Thalassomonas sp.	600	91	--
Chrysophyta	2,400	424	10
Dinobryon cylindricum	200	--	10
Phaeocystis pouchetii	1,800	--	--
Unidentified	400	424	--
Euglenophyta	5,600	81	--
Euglena proxima	1,000	--	--
E. schmitzii	4,600	10	--
E. viridis	--	71	--
Pyrrophyta	11,200	816	10
Coolia monotis	--	30	--
Dinophysis sp.	200	--	--
D. arctica	--	10	--
Glenodinium sp.	4,200	414	--
Goniaulax sp.	400	20	--
G. catenata	--	30	10
G. monilata	200	--	--
G. scrippsae	1,400	--	--
G. tamarensis	--	51	--
Gymnodinium sp.	200	--	--
G. lohmanni	--	50	--
Oxytoxum sp.	--	40	--
Peridinium sp.	--	111	--
P. punctulatum	400	20	--
Prorocentrum sp.	3,200	--	--
P. micans	400	--	--
P. rampii	600	40	--

Table 13. Components of the sea ice fauna and the under-ice zooplankton taken in southeastern Hudson Bay in April of 1983.

	In the ice	Below the ice	
		In plume	Outside plume
Hydrozoa: larvae	+	+	
Rotifera	+	+	
Copepoda: *Tisbe furcata* (Baird)	+	+	
Ectinosomidae	+	+	
Ciliata	+		+
Flagellata	+		+
Copepoda: *Harpacticus superflexus* Willey	+		+
Nematoda	+	+	+
Copepoda: *Oithona similis* Claus	+	+	+
Acarina	+	+	+
Gastropoda: *Spiratella helicina* (Phipps)		+	
Ostracoda: *Philomedes globosa* (Lilljeborg)		+	
Gastropoda: larvae		+	+
Copepoda: *Pseudocalanus* sp.		+	+
Hydrozoa: *Aeginopsis laurenti* Brandt			+
Polychaeta: larvae			+
Copepoda: *Microcalanus pygmaeus* (G. O. Sars)			+
Acartia longiremis (Lilljeborg)			+
Oncaea borealis G. O. Sars			+
Isopoda: larvae			+
Mysidacea: *Mysis oculata* (Fabricius)			+
Echinodermata: larvae			+
Chaetognatha: *Sagitta elegans* Verrill			+
Larvacea: *Fritillaria borealis* Lohmann			+
Oikopleura labradoriensis Lohmann			+
	10	11	19

Table 14. Ice and under-ice fauna at Station 29, 28 April 1983.

Station depth 27 m	Ice thickness 117 cm.		
	Ice	Water	
	lower 3 cm	0 m	6 m
Temperature (°C)	0	0.1	-1.4
Salinity (°/₀₀)	0	0.0	27.9
Ciliata			53/m^3
Hydrozoa: *Aeginopsis laurenti*			13
Nematoda		13/m^3	
Rotifera		145	
Polychaeta: larvae			26
Gastropoda: *Spiratella helicina*			211
Copepoda: *Pseudocalanus* sp. V			132
IV			238
III			13
II			13
Microcalanus pygmaeus III			40
II			13
I			13
Oithona similis VI M			106
VI F			185
V		13	1135
IV		26	898
III			686
II			238
I			13
exoskeletons			40
nauplii		13	1637
Acarina	2.5/100 cm^2		26
Chaetognatha: *Sagitta elegans*			26
Larvacea: *Fritillaria borealis*			13
Eggs			106
	2.5/100 cm^2	210/m^3	5874/m^3

Table 15. Ice and under-ice fauna at Station 60, 27 April 1983.

Station depth 45 m		Ice thickness 115 cm.		
		Ice	Water	
		lower 3 cm	0 m	6 m
Temperature (°C)		0	-0.1	-1.4
Salinity (°/₀₀)		3	2.6	28.2
Rotifera		2.5/100 cm^2	594/m^3	
Gastropoda: larvae				172/m^3
Copepoda: *Pseudocalanus* sp.	V			172
	IV			119
	III			66
	II			106
	I			40
Oithona similis	VI M			26
	VI F			79
	V			568
	IV			185
	III			185
	II			53
Oncaea borealis	VI F			13
	V			13
Tisbe furcata	IV		13	
Ectinosomidae	V		13	
nauplii				304
Acarina				26
Larvacea: *Oikopleura labradoriensis*				13
Fritillaria borealis				13
Eggs			92	
		2.5/100 cm^2	712/m^3	2153/m^3

Table 16. Ice and under-ice fauna at Station 100, 28 April 1983.

Station depth 74 m	Ice thickness 111 cm.		
	Ice	Water	
	lower 3 cm	0 m	5 m
Temperature (°C)	0	-0.1	-1.5
Salinity (°/₀₀)	2	2.3	26.9
Ciliata	1.1/100 cm^2		13/m^3
Hydrozoa: larvae		13/m^3	
Nematoda	2.2		
Rotifera	7.7	13715	396
Gastropoda: larvae			79
Ostracoda: *Philomedes globosa*		13	
Copepoda: *Pseudocalanus* sp. VI M			13
VI F			13
V			145
IV			105
III			26
II			40
Microcalanus pygmaeus IV			13
Oithona similis VI M			53
VI F			132
V			488
IV			647
III			515
II			370
I			26
Ectinosomidae nauplii			13
			1069
Mysidacea: *Mysis oculata*			40
Acarina	9.9	251	119
Echinodermata: larvae			26
Larvacea: *Fritillaria borealis*			26
	20.9/100 cm^2	13992/m^3	4367/m^3

Table 17. Ice and under-ice fauna at Station 221, 28 April 1983.

Station depth 74 m	Ice thickness 112 cm.	
	Ice	Water
	lower 3 cm	0 m
Temperature (°C)	0	-0.1
Salinity (°/₀₀)	3	3.0
Ciliata	14.8/100 cm^2	
Nematoda	472.3	330/m^3
Rotifera	110.7	1848
Copepoda: *Pseudocalanus* sp. VI M		13
Oithona similis VI F		13
Acarina	7.4	13
Eggs	88.6	13
	693.8/100 cm^2	2230/m^3

Table 18. Ice and under-ice fauna at Station 223, 28 April 1983.

Station depth 86 m Ice thickness 118 cm.

	Ice	Water	
	lower 3 cm	0 m	4 m
Temperature (°C)	-1	-1.0	-1.5
Salinity (°/₀₀)	27	27.4	27.6

Ciliata		45.9/100 cm^2		26/m^3
Flagellata		2581.2	40/m^3	
Nematoda		2493.7	26	13
Rotifera		262.7	158	66
Gastropoda: larvae				13
Polychaeta: larvae				13
Copepoda: *Pseudocalanus* sp.	VI M			79
	VI F		26	198
	V		185	1360
	IV		66	
	III		26	264
	II			26
Acartia longiremis	VI M		13	
	VI F		13	13
	V		39	53
Oithona similis	VI M		26	53
	VI F		1016	343
	V		2099	1637
	IV		1030	1307
	III		409	541
	II			277
	I			13
	exoskeletons			106
Harpacticus superflexus	VI M	12.5		
	VI F		13	
	V	12.5		
	III	4.2		
	II	4.2		
	exoskeletons	12.5	13	
Ectinosomidae	IV	4.2		
	II	12.5		
	exoskeletons	12.5		

Table 18. (Continued)

Station depth 86 m	Ice thickness 118 cm.		
	Ice	Water	
	lower 3 cm	0 m	4 m
Temperature (°C)	-1	-1.0	-1.5
Salinity (°/₀₀)	27	27.4	27.6
nauplii		713	1597
Isopoda: larvae			13
Acarina	20.9	26	119
Eggs	116.8		
	5596.3/100 cm^2	5937/m^3	8130/m^3

Table 19. Ice and under-ice fauna at Station 242, 28 April 1983.

Station depth 67 m	Ice thickness 130 cm.	
	Ice	Water
	lower 3 cm	0 m
Temperature (°C)	0	-0.1
Salinity (°/₀₀)	2	1.9
Rotifera	9.8/100 cm^2	2429/m^3
Gastropoda: larvae		13
Copepoda: *Pseudocalanus* sp. II		13
Oithona similis V	2.5	26
exoskeletons		13
nauplii		119
Acarina	19.7	40
Eggs	41.8	
	73.8/100 cm^2	2653/m^3

Table 20. Ice and under-ice fauna at Station 253, 28 April 1983.

Station depth 100 m	Ice thickness 120 cm.	
	Ice	Water
	lower 3 cm	0 m
Temperature (°C)	-1	-1.5
Salinity (°/₀₀)	27	26.9

Ciliata		194.3/100 cm^2	40/m^3
Flagellata		125.5	
Hydrozoa: larvae		4.9	
Nematoda		1926.2	53
Rotifera		263.2	119
Gastropoda: larvae			40
Ostracoda: *Philomedes globosa*			13
Copepoda: *Pseudocalanus* sp.	V		79
	IV		80
	III		53
	II		26
Acartia longiremis	V		66
	IV		92
	III		13
Oithona similis	VI M		13
	VI F		264
	V		1346
	IV		502
	III		53
	II		13
	I		26
	exoskeletons		145
Harpacticus superflexus	V	4.9	
	IV	4.9	
	III	2.5	
	exoskeletons	41.8	
Ectinosomidae	V	2.5	
	III	2.5	
	I	4.9	
	exoskeletons	4.9	

Table 20. (Continued)

Station depth 100 m	Ice thickness 120 cm.	
	Ice	Water
	lower 3 cm	0 m
Temperature (°C)	-1	-1.5
Salinity (°/₀₀)	27	26.9
nauplii	7.4	502
exoskeletons	32.0	
Isopoda: larvae		13
Acarina		13
Eggs	4.9	
	2627.3/100 cm^2	3564/m^3

Table 21. Ice and under-ice fauna at Station 262, 28 April 1983.

Station depth 70 m	Ice thickness 112 cm.		
	Ice	Water	
	lower 3 cm	0 m	3 m
Temperature (°C)	-1	-1.0	-1.4
Salinity (°/₀₀)	18	18.0	25.9
Ciliata	191.9/100 cm^2	53/m^3	13/m^3
Flagellata	24.6		
Hydrozoa: *Aeginopsis laurenti*		13	
larvae	83.6		
Nematoda	391.1	132	
Rotifera	71.3	937	264
Polychaeta: larvae		26	
Gastropoda: larvae			40
Copepoda: *Pseudocalanus* sp. VI M			26
VI F			53
V			396
IV		13	608
III			172
II			79
I			26
Microcalanus pygmaeus IV		13	
Acartia longiremis V			52
IV			52
calanoid exoskeletons	4.9		
Oithona similis VI M			66
VI F		13	264
V		40	1148
IV		13	1003
III			436
II		26	92
exoskeletons			13
Harpacticus superflexus VI F			13
I		13	
Tisbe furcata exoskeletons	4.9		
nauplii		251	818
exoskeletons	2.5		

Table 21. (Continued)

Station depth 70 m	Ice thickness 112 cm.		
	Ice		Water
	lower 3 cm	0 m	3 m
Temperature (°C)	-1	-1.0	-1.4
Salinity (°/₀₀)	18	18.0	25.9
Acarina	2.5	79	53
Larvacea: Fritillaria borealis			40
Eggs		409	26
	777.3/100 cm^2	2031/m^3	5753/m^3

Table 22. Ice and under-ice fauna at Station 302, 28 April 1983.

Station depth 93 m	Ice thickness 114 cm.		
	Ice	Water	
	lower 3 cm	0 m	6 m
Temperature (°C)	0	0.0	-1.5
Salinity (°/₀₀)	1	1.0	27.4
Ciliata	2.8/100 cm^2		26/m^3
Nematoda		119/m^3	40
Rotifera	7.0	10798	581
Gastropoda: *Spiratella helicina*		13	
larvae		26	185
Copepoda: *Pseudocalanus* sp. VI M			13
VI F			13
V			106
IV		26	92
III			26
II			40
I			26
exoskeletons			26
Acartia longiremis V			53
III			26
Oithona similis VI M			211
VI F			317
V		158	1954
IV		53	1888
III		53	1030
II		40	317
I			53
exoskeletons			66
nauplii		79	1531
Acarina			13
Larvacea: *Fritillaria borealis*			13
Eggs	11.1		
	20.9/100 cm^2	11365/m^3	8646/m^3